ABSTRACT

An oligonucleotide-based SERS molecular probe (SMP) includes a nanoparticle having at least a metal component, and at least one pin loop, the pin loop including a loop sequence complementary to at least one target sequence, a first stem attached to one end of the loop sequence, a second stem attached to the other end of the loop sequence, and at least one SERS active label attached to the first stem. The nanoparticle is attached to the second stem. The probe generates a stronger SERS signal upon irradiation with excitation radiation when not bound to the target sequence as compared to the SERS signal generated following hybridization of the probe with the target sequence.